



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/671,531   | 09/29/2003  | Rui-Ting Zheng       | ZHEN3002/EM         | 7509             |
| 23364  | 7590        | 01/18/2005           | EXAMINER            |                  |
| BACON & THOMAS, PLLC<br>625 SLATERS LANE<br>FOURTH FLOOR<br>ALEXANDRIA, VA 22314 |             |                      | LORENZO, JERRY A    |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 1734                |                  |

DATE MAILED: 01/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

125

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/671,531 | <b>Applicant(s)</b><br>ZHENG ET AL. |  |
|                              | <b>Examiner</b><br>Jerry A. Lorengo  | <b>Art Unit</b><br>1734             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1734

## **DETAILED ACTION**

(1)

### ***Election/Restrictions***

Applicant's election without traverse of Group I, claims 1-17 in the reply filed on December 21, 2004 is acknowledged.

(2)

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 10 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the recess" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 discloses that the bonding of the transfer layer to the substrate is performed by direct contact. Claim 1 (from which claim 10 depends) however, discloses that the substrate is coated with an adhesion layer prior to contact of the transfer layer thereto. Therefore, if there exists an interposed adhesion layer between the transfer material and substrate, per claim 1, how can the transfer layer, per claim 10, be bonded to the substrate by direct contact?

Claim 13 is indefinite because it is not understood by the examiner what is meant by the phrase "step-by-step." In the interest of compact prosecution, it has been assumed for examination purposes that claim 13 requires that the method steps of claim 1 be performed in the sequential order as written.

(3)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 1734

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,251,208 to Serizawa et al. in view of U.S. Patent No. 5,853,46 to Carre et al.

Regarding applicant claim 1, Serizawa et al. disclose a step-wise method, as per applicant claim 13, for the bonding of a patterned imprint by transferring comprising the steps of:

(1) Providing a first assembly (module) comprising a molding substrate 2, a molding layer 1 and patterned molding features, i.e., protrusions 3a and recesses 6 (Figure 1; column 5, lines 19-35);

(2) Providing a second assembly (module) having a substrate 20 (Figure 5; column 6, lines 16-24);

(3) Filling a transfer layer 7 into the recesses 6 of the patterned molding features (Figures 1 and 2; column 5, lines 43-62);

(4) Coating an adhesion layer (adhesive) onto the surface of the substrate 20 of the second assembly (column 7, lines 12-13);

Art Unit: 1734

(5) Contacting the first assembly with the second assembly such that the transfer layer 7 is contacted and bonded to the substrate 20 via the adhesion layer (Figure 5; column 6, lines 30-36); and

(6) Separating the second assembly from the first assembly thus transferring the now patterned transfer layer 7 to the adhesion coated substrate 20 (Figure 6; column 6, lines 36-40). The method of Serizawa et al. is illustrated below:

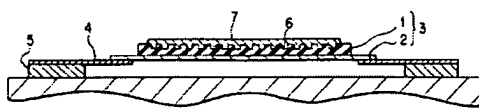


FIG. 1

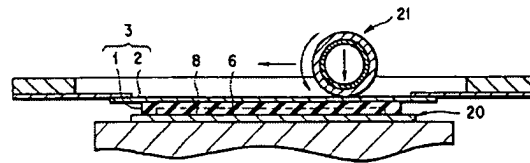


FIG. 5

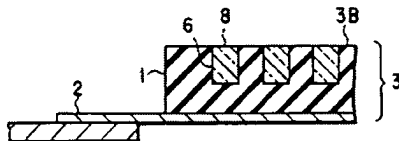


FIG. 4

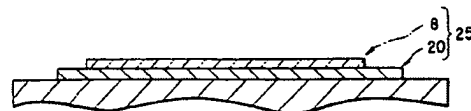


FIG. 6

Serizawa et al. also disclose that the molding layer 1 may be comprises of an inherently releasable material such as silicone rubber (column 5, lines 36-42). Although they do not specifically disclose, as per applicant claim 1, that a release layer is coated onto the molding features of the molding layer, it would have been obvious to one of ordinary skill in the art at the time of invention to substitute a release-coated molding material in the method of Serizawa et al. motivated by the fact that Carre et al., also drawn to methods for the bonding of a patterned imprint by transferring from a molding layer having molding features, disclose that inherently releasable molding layers and molding layers which have been coated with a releasing material are functional alternatives within the art (column 7, lines 25-42).

Regarding applicant claim 2, Serizawa et al. disclose that the molding substrate 2 may comprise metals or plastics, i.e., polymers (column 5, lines 27-29; column 9, lines 60-62).

Art Unit: 1734

Regarding applicant claim 3, Serizawa et al. disclose that the depth of the recesses 6 can have a depth ranging from 200  $\mu\text{m}$  or less (column 2, lines 29-34; column 7, lines 1-6; column 10, lines 18-21).

Regarding applicant claim 4, Serizawa et al. disclose that the width of the recesses 6 (which determined the width of the transfer layer pattern features) is 70  $\mu\text{m}$  or more (column 6, lines 61-63).

Regarding applicant claim 5, Serizawa et al. disclose that the ratio of the depth to width of the recesses 6 (which determine the same ratio of the transfer layer) in one example has a depth/height of 200  $\mu\text{m}$  and a width of 70  $\mu\text{m}$  which would result in a D:W ratio of approximately 2.85:1 (column 10, lines 53-56).

Regarding applicant claim 7, Serizawa et al. disclose that the transfer layer 7 may be composed of metals, high polymers such as acrylic acid oligomer (column 8, lines 33-39; column 10, lines 11-14).

Regarding applicant claim 8, Serizawa et al. disclose that the height of the transfer layer is determined by the depth of the molding features (recesses) 6 and are thus equal (column 5, lines 57-62).

Regarding applicant claims 9, Serizawa et al. disclose that the contacting and bonding step is accomplished under the effects of pressing, i.e., pressurization (column 6, lines 33-36).

Regarding applicant claim 10, Serizawa et al. disclose that the bonding of the transfer layer of the first module may be by direct contact excluding the use of an adhesion layer (column 8, lines 27-56).

Regarding applicant claims 11 and 12, Serizawa et al. disclose that a multilaminate may be formed on the substrate through the transfer of a plurality of transfer layers 7 to the same location, i.e., one over the other (column 8, lines 11-20).

Regarding applicant claim 15, Serizawa et al. disclose that the molding layer 1 and the molding substrate 2 are integrated into a single composite sheet 3 (column 5, lines 25-35).

(4)

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as combined in section (3), above, in further view of U.S. Patent No. 6,485,596 to Toyoda et al.

Art Unit: 1734

Serizawa et al. and Carre et al., as combined in section (3), above, disclose a method for the bonding of a patterned imprint by transferring. Although they do not specifically disclose, as per applicant claim 14, that the patterned molding features are aligned with the substrate prior to contact, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the method resulting from the combined references with such a step motivated by the fact that Toyoda et al., also drawn to methods for the bonding of a patterned imprint by transferring from a molding layer having molding features, disclose that it is known in such methodologies to provide for a preliminary step of alignment of the molding features and the substrate by way of positioning marks (column 2, lines 25-38; column 8, line 27 to column 9, line 26).

(5)

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as combined in section (3), above, in further view of U.S. Patent No. 6,518,168 to Clem et al.

Serizawa et al. and Carre et al., as combined in section (3), above, disclose a method for the bonding of a patterned imprint by transferring including the step of coating the transfer material 7 onto the molding layer. Although they are silent as to the coating methods set forth in applicant claim 6, it would have been obvious to one of ordinary skill in the art at the time of invention to utilize the claimed coating methods, such as spin-coating, motivated by the fact that Clem et al., also drawn to methods for the bonding of a patterned imprint by transferring from a molding layer having molding features (Figures 1a-1b; column 6, lines 14-59), disclose that the coating of the mold with the material to be transferred to the substrate may be by way of any convenient method including spin-coating (column 13, lines 16-25).

(6)

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as combined in section (3), above, in further view of U.S. Patent No. 6,027,595 to Suleski.

Serizawa et al. and Carre et al., as combined in section (3), above, disclose a method for the bonding of a patterned imprint by transferring. They also do not specifically disclose, as per applicant claims 16 and 17, the use of the transferred features as a mask whereby the feature pattern is transferred into the substrate by etching.

Art Unit: 1734

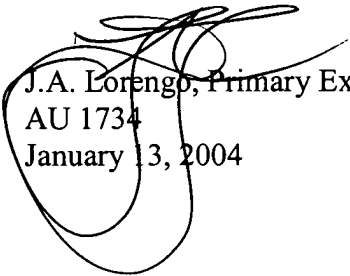
Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of invention to utilize the transferred features (deposited on the substrate by the method resulting from the combination of Serizawa et al. and Carre et al.) as a mask whereby the feature pattern is transferred into the substrate by etching motivated by the fact that Suleski, also drawn to methods for the bonding of a patterned imprint by transferring from a molding layer having molding features (Figure 1; abstract), disclose that the transferred features can embody the finished product, or they can be utilized as a mask to transfer the pattern into the substrate such as by reactive ion etching (a form of dry etching), chemically assisted ion beam etching, plasma etching, or ion milling (column 6, lines 5-28).

(7)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry A. Lorengo whose telephone number is (571) 272-1233. The examiner can normally be reached on Monday through Friday, 8:30 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



J.A. Lorengo, Primary Examiner  
AU 1734  
January 13, 2004